in the Francis weir formula to determine the discharge. It is assumed that the maximum stage of 6.24 feet occurred about 9:45 p. m., the discharge at that time being 12,000 cubic feet per second. It is believed that the flow up to that time came from a point below the mouth of Cobb Creek, which is 9 miles upstream from the dam. The drainage area between the mouth of Cobb Creek and the power dam as measured from the topographic map is 32 square miles, and the run-off was therefore 375 second-feet to the square mile.

The drainage area, including Cobb Creek and everything below Butler, would be 46 square miles, and the maximum rate of run-off would be correspondingly reduced to 261 second-feet to the square mile if Cobb Creek is assumed to have contributed to this peak discharge. It is reasonably certain that the flow above Butler did not enter into this rate of discharge, as it would require an average velocity in Watauga River of 5 feet a second for the flow at Butler to reach the Watauga Power Dam in three hours, and the maximum flow at the dam occurred three hours after the rain began. It seems more than probable that this maximum discharge was derived entirely from the area below Cobb Creek.

The maximum discharge at the dam and other points in this region, as determined by this investigation, is given below.

Stream	Location	Gage height (feet)	Discharge (second-feet)	Drainage area included (square mile)	Run-off (second-feet per square mile)
Watauga	Butler	5.71	6,500	[1] 427	15.2
Watauga	Power dam	6.24	12,000	32	375
Watauga	Elizabethton	13.40	30,000	270	111
Doe	Valley Forge	6.70	5,000	[1] 132	37.9
South Fork of Holston River.	Bluff City	7.25	8,800	[1] 828	10.6

[1] Total drainage area of stream.

An attempt was made to obtain data on the run-off of some of the smaller tributaries that lie wholly within the region of highest rainfall, but on all such streams the slope was so steep and the amount of rock, trees, and other débris carried by the floods so great that nothing resembling an accurate estimate of maximum run-off was possible. All hope of getting any such figures was therefore abandoned. A very striking illustration of this point is the small ravine at Cardens Bluff, where two houses were demolished and nine of the occupants drowned. A careful examination of this ravine indicates that its total catchment area does not exceed 15 acres. One of the inhabitants who escaped stated that a wall of water, rock, and earth 8 to 10 feet in height crashed into these houses without perceptible warning, totally wrecking them. He himself was thrown 30 feet or more by the force of the blow and was severly injured.

The accompanying illustrations (figs. 1, 2, and 3) show something of the force of this record cloudburst and the resulting damage.

No accurate estimate of the damage to property has been made, but the best information available indicates that it was at least half a million dollars.

NOTES, ABSTRACTS, AND REVIEWS

TROPICAL CYCLONES

In his presidential address to the Section of Physics and Mathematics of the Tenth Indian Science Congress, Dr. S. K. Banerji reviewed the present position of our knowledge regarding the origin and causes of tropical cyclones. The contributions to this branch of meteorology of Hann, Lodge, Dines, Bjerknes, and Shaw are considered and none of them found to give a satisfactory explanation of the phenomena. The recent work of Shaw contained in his essay "The Birth and Death of Cyclones" naturally received the most attention.

Doctor Banerji considers that the air currents on the two sides of the "trough of low pressure" which exist over northern India during the monsoon may be the origin of the storms which form at the head of the bay during that season, but he is unable to accept Shaw's explanation of the subsequent development and progress in the development of the theory of cyclones, but considers that many more data, especially from the upper air, are required before much further progress can be made.

LIGHTNING EXPLODES DYNAMITE

Six men were instantly killed at a rock quarry 7 miles south of Winston-Salem, N. C., on June 24, 1924.

The men had sought shelter from a passing electric storm in a temporary office structure in which was stored a quantity of dynamite. Lightning struck a near-by tree and in some manner not clearly understood, exploded the dynamite. The office structure was fired, as were also the inflammable parts of an automobile that was parked near by. The bodies of the men were badly mangled and burned. The explosion was witnessed by persons at a distance.—*News-Observer*, Raleigh, N. C.

WEATHER CONDITIONS IN THE POLAR REGIONS AND AMUNDSEN'S POLAR FLIGHT

In the Tidens Tega for March, 1924, there was an account of the weather conditions in the north polar region, written by Doctor Hesselberg in view of Amund-